

IN THE CLAIMS:

Please cancel without prejudice the claims withdrawn from consideration — i. e. claims 18 through 25, and 28.

Also kindly change claims 1, 3 through 7, 11, 13, 26 and 27, to read as indicated below.

1 1. (currently amended) A method for color-calibrating a
2 printing device; said method comprising the steps of:
3 using the printing device to print a gray ramp with
4 black ink;
5 using the same said printing device to print a nomi-
6 nally gray ramp with composite-black ink;
7 measuring and comparing the printed black-ink gray ramp
8 and the printed composite-black gray ramp [[s]]; and
9 employing the measured black-ink ramp as a standard to
10 correct the measured composite-black ramp.

1 2. (original) The method of claim 1, wherein:
2 all the steps are performed automatically.

1 3. (currently amended) A [The] method [of claim 1,] for
2 color-calibrating a printing device; said method comprising
3 the steps of:

4 using the printing device to print a gray ramp with
5 black ink;

6 using the same said printing device to print a nomi-
7 nally gray ramp with composite-black ink;

8 measuring and comparing the printed black-ink gray ramp
9 and the printed composite-black gray ramp; and

10 employing the measured black-ink ramp as a standard to
11 correct the measured composite-black ramp;

12 wherein [:] the employing step comprises treating the
13 black-ink ramp as a zero-chroma standard to correct chroma
14 found in the composite-black ramp.

1 4. (currently amended) The method of claim 2 [[1]],
2 further comprising the step of:

3 using the compared black-ink ramp and composite-black
4 ramp [[s]] to also correct other printing with composite
5 black.

1 5. (currently amended) The method of claim 4, further
2 comprising the step of:

3 using the compared black-ink ramp and composite-black
4 ramp [[s]] to also correct other colors to be printed by the
5 printer.

1 6. (currently amended) The method of claim 2 [[1]],
2 wherein:

3 the using step with composite-black ink comprises
4 printing, for a particular gray tonal level, plural combina-
5 tions of nonblack inks.

1 7. (original) The method of claim 1 [[6]], wherein:
2 the using step with composite-black ink comprises
3 printing, for a particular gray tonal level, plural combina-
4 tions of nonblack inks; and
5 the plural combinations of nonblack inks substantially
6 bracket nominal values for the particular gray value.

1 8. (original) The method of claim 7, wherein the employ-
2 ing step comprises:

3 searching the printed and measured plural combinations
4 of nonblack inks to find a combination that is nearest the
5 corresponding particular gray value.

1 9. (original) The method of claim 7, wherein the employ-
2 ing step comprises:

3 searching the printed and measured plural combinations
4 of nonblack inks to find at least two combinations that
5 bracket a corresponding particular gray value; and

6 interpolating among the at least two combinations to
7 determine an optimal combination for matching the corre-
8 sponding particular gray value.

1 10. (original) The method of claim 7, wherein said print-
2 ing with plural combinations of nonblack inks comprises:
3 optimized bracketing of the nominal values.

1 11. (currently amended) The method of claim 10, wherein:
2 said optimized bracketing comprises printing with said
3 plural combinations of nonblack inks that surround the nomi-
4 nal value in a pattern of color values, in color space, that
5 is substantially centered on the nominal value.

1 12. (original) The method of claim 6, wherein the employ-
2 ing step comprises:
3 searching the printed and measured plural combinations
4 of nonblack inks to find a combination that is nearest a
5 corresponding particular gray value.

1 13. (currently amended) A [The] method [of claim 1,] for
2 color-calibrating a printing device; said method comprising
3 the steps of:

4 using the printing device to print a gray ramp with
5 black ink;

6 using the same said printing device to print a nomi-
7 nally gray ramp with composite-black ink;

8 measuring and comparing the printed gray ramps; and
9 employing the measured black-ink ramp as a standard to
10 correct the measured composite-black ramp; wherein:

11 the measuring and comparing step comprises inserting
12 measured values of the printed gray ramps into equations
13 representing a colorimetric model of the printer; and

14 the employing step comprises solving the equations to
15 derive correction values for use in adjusting ink signals in
16 future printing.

1 14. (original) The method of claim 13, wherein:
2 the colorimetric equations include plural expressions
3 having the form:

4

5 $H(t, n, a) = D(t, n) \cdot E(t, n) \cdot \dots \cdot F(t, n)$,

6

7 wherein H is a hybrid color printed by use of at least two
8 constituent colors,

9 D is one of the constituent colors,
10 E is another of the constituent colors,
11 "..." represents possible additional constituent
12 colors of said at least two,
13 F is a correction factor,
14 t is a tonal level at which H , D , E and "..." are
15 evaluated,
16 n is a sensor channel at which all the above are
17 evaluated, and
18 a is a scaling factor that relates overall range of
19 the hybrid color with overall range of the con-
20 stituent colors.

1 15. (original) The method of claim 14, wherein:
2 in some of the expressions, $H = cK$, $D = S_1$ and $E = S_2$,
3 where cK is composite black and S_1 and S_2 are secondaries;
4 and
5 in others of the expressions, $H = S$, $D = P_1$ and $E = P_2$,
6 where S is a secondary and P_1 and P_2 are primaries.

1 16. (original) The method of claim 15, wherein:
2 in said others of the expressions a = 1.

1 17. (original) The method of claim 13, wherein:
2 the equations are solved by iteration.

18. - 25. (canceled)

1 26. (currently amended) A method for automatically color-
2 calibrating a printer; said method comprising the steps of:
3 using the printer to print a ramp in a particular color
4 with actual ink of that color;
5 using the same said printer to print a ramp nominally
6 in said particular color but with inks of other colors;
7 measuring and comparing the actual-ink printed ramp and
8 the other-colors-inks printed ramp; and
9 using the measured actual-ink ramp as a standard to
10 calibrate and correct the measured other-colors-inks ramp
11 and also to correct other printing with said other colors.

1 27. (currently amended) A method for automatically color-
2 calibrating a printer; said method comprising the steps of:
3 using the printer to print a ramp in a particular color
4 with actual ink of that color;
5 using the same said printer to print a ramp nominally
6 in said particular color but with inks of other colors;
7 measuring and comparing the printed ramps; and
8 using the measured actual-ink ramp as a standard to
9 calibrate and correct the measured other-colors-ink ramp and
10 also to correct other printing with said other colors; [The
11 printer of claim 26,] wherein:
12 said actual ink is selected from the group consisting
13 of:
14 red ink,
15 green ink, and
16 blue ink;
17
18 and said inks of other colors are selected from the
19 group consisting of, respectively:
20
21 magenta ink and yellow ink,
22 yellow ink and cyan ink, and
23 cyan ink and magenta ink.

28. (canceled)